

Extruded alloys- tempers & mechanical properties:

Data sheet for:

EN-AW 6060 (Al MgSi0,5) DIN 3.3206

DKT item number: 06012 (6060 - cut into 2 meter pieces)



* Only available with a prior notice of 5 weeks and a minimum ordered quantity of 22 tons dispatched in one go.

Alloy chemical composition as per EN 573-3:2-13											
Alloy	Si	Fe	Cu	Mn	Mg	Cr	Zn	Ti	Other		Al
									Each	Total	
6060	0,30-0,60	0,10-0,30	0,10	0,10	0,35-0,60	0,05	0,15	0,10	0,05	0,15	Rest

Available combinations of Alloys & Tempers				
6060				
O				
T4				
T5				
T6				
T66				

Temper designation EN 515:2017	
O	Annealed wrought alloys
T4	Solution heat treated & naturally aged.
T5	Cooled from an elevated temperature forming operation & artificially aged (precipitation hardened)
T6	Solution heat treated & artificially aged (precipitation hardened). Press quenching required.
T66	Cooled from an elevated temperature forming operation & artificially aged (precipitation hardened) to a higher level of mechanical properties through special control of manufacturing processes. Press quenching required.

Physical properties	Alloys EN-AW
Alloys EN-AW	6060
Melting range °C	585-650
Density g/cm ³	2,70
Electrical Conductivity MS/m	34-38
Thermal Conductivity W/(m K)	200-220
Specific Heat J / (Kg K)	898
Thermal Expansion Values	
-50 to 20 °C (10 ⁻⁶ /K)	21,8
20 to 100 °C (10 ⁻⁶ /K)	23,4
20 to 200 °C (10 ⁻⁶ /K)	24,5
20 to 300 °C (10 ⁻⁶ /K)	25,6
Young's Modulus MPa	69500
Shear Modulus MPa	26100

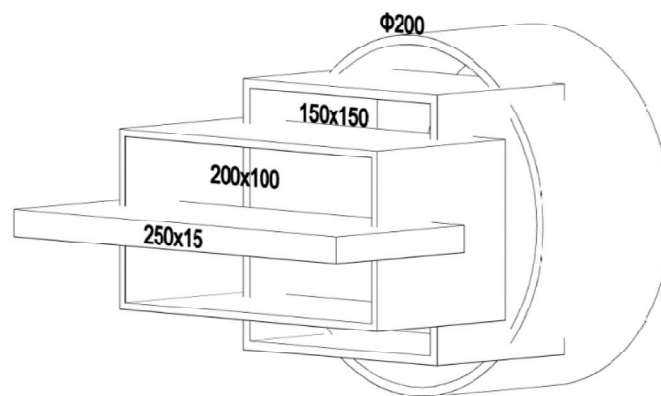
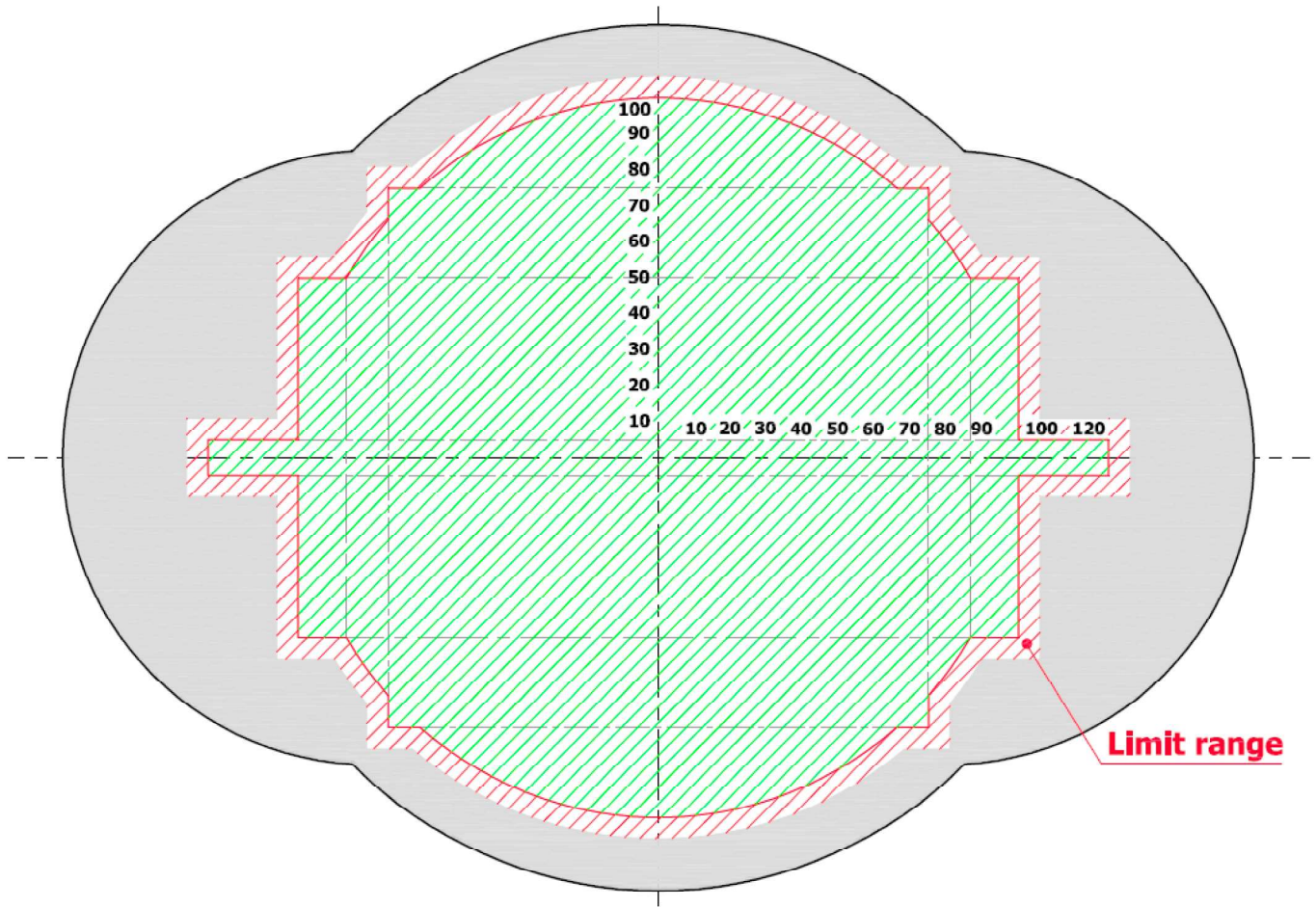
Mechanical properties as per EN 755-2:2016 (EXTRUDED PROFILES)

Alloy	Temper	Wall Thickness	Tensile strength	Yield strength	Elongation		Brinell Hardness
		e mm*	R _m MPa min	R _{p0,2} MPa min	A % min	A _{50mm} % min	HB**
EN-AW 6060	T4	e ≤ 25	120	60	16	14	50
	T5	e ≤ 5	160	120	8	6	60
		5 < e ≤ 25	140	100	8	6	60
	T6	e ≤ 5	190	150	8	6	60
		5 < e ≤ 25	170	140	8	6	60
	T66	e ≤ 5	215	160	8	6	75
		5 < e ≤ 25	195	150	8	6	75

* For a profile having different wall thicknesses, the lowest specified values of properties shall be considered as valid for the whole profile cross section. ** The values for the HB hardness are indicative only.

Bendability classes to standardised tempers (EN 15088:2005)

Alloy	T4	T5	T6	T6510	T64	T66
EN-AW 6060	-	B3	B3	B3	B2	B3
B2	Material is in mid strained hardened/naturally aged/partially aged hardened. Bendability for simple symmetrical sections with medium radii is possible. Thin walled or complicated sections may require special devices or bending machines.					
B3	Material is in hard/fully age hardened. For simple symmetrical sections bendability is possible only with relatively large radii. Thin walled or complicated sections may require special devices or bending machines.					



Maximum extrusion dimensions per standard profile (shape) category.

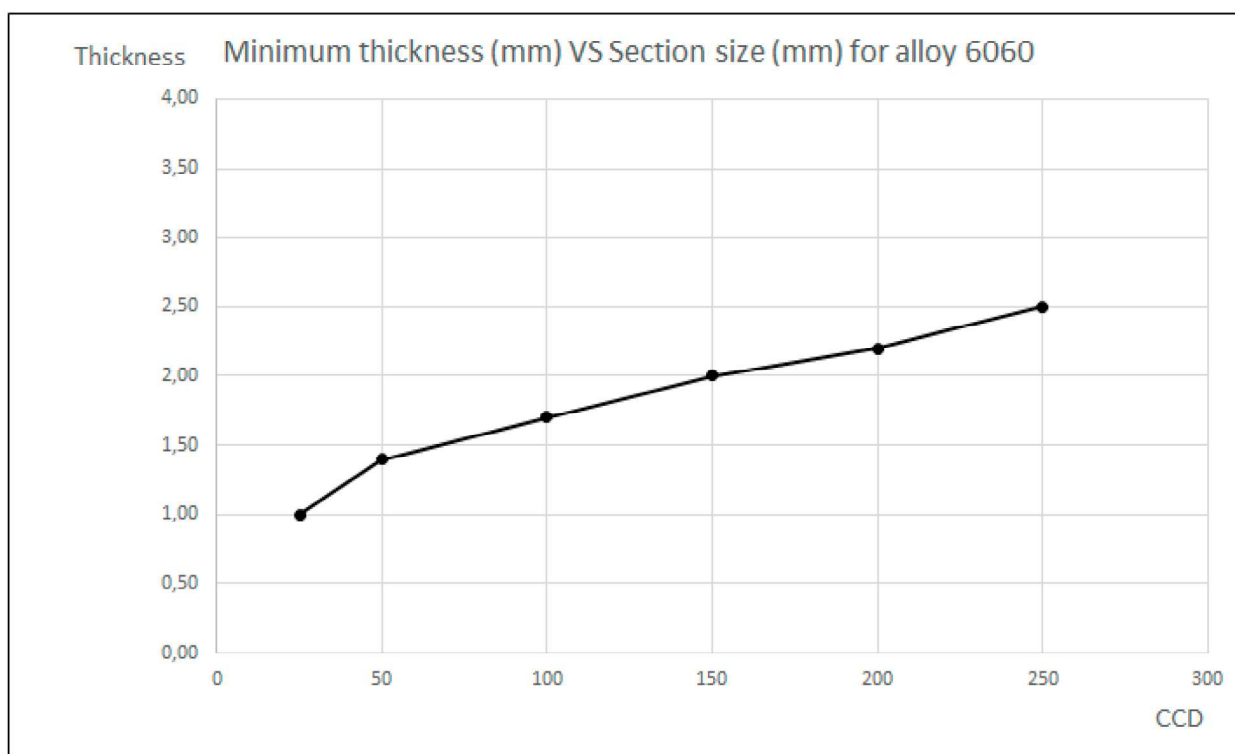
01 Square	02 Rect	03 Round	04 Angle	05 Angle	06 T-section	07 U-Section	09/12 Square	10/13 Rect.	11 Round
									
61x61	250x15	70	150x150x13	240x40x14	150x150x13	40x240x40x12	150x150x6	200x100x6	200x5

Profile weight production range

Minimum	Maximum
0,100 Kg/m	10,00 Kg/m

Thickness vs Alloy

Depending on the size of the section (Circumscribed Circle Diameter, horizontal axis) and the alloy to extrude, the minimum thickness should follow the trend indicated by the chart below (vertical axis):



Product forms & Applications

Alloys	Forms	Characteristic properties	Applications
EN-AW 6060	Extruded bars Extruded tubes Extruded profiles	V.good corrosion resistance, weldability, Medium strength, Complex sections, Anodising quality.	Architectural sections, windows, doors, curtain walls, lightings, railing, ladders, furniture, fences, truck flooring, heat sinks, irrigation, cooling pipes, electronic modules.

Quality control

Cosmos follow the inspection rules and control the shape quality characteristics and mechanical properties of the extruded sections under the following European norms:

EN Standard	Description
Aluminium & aluminium alloys- Extruded rod/bar, tubes and profiles	
EN 755-1	Technical conditions for inspection & delivery
EN 755-2	Mechanical properties
EN 515	Temper designation
EN 573-3	Chemical composition and form of products
EN 755-3	Round bars, tolerances on dimension & form
EN 755-4	Square bars, tolerances on dimension & form
EN 755-5	Rectangular bars, tolerances on dimension & form
EN 755-6	Hexagonal bars, tolerances on dimension & form
EN 755-8	Porthole square, rect, hex, Oct, & round tubes, tolerances on dimension & form
EN 755-9	Profiles, tolerances on dimension & form
EN- 12020-1	Technical conditions for inspection & delivery (for precision profiles only)
EN- 12020-2	Tolerances on dimension & form (for precision profiles only)
Metallic products- materials	
EN ISO 6892-1	Tensile testing- part 1: Method of test at room temperature
EN- 10204	Inspection certificates 2.3, 3.1, 3.2
On special request	
ASTM B 221M-07 (Metric)	Standard specification for Aluminium and Aluminium alloy Extruded Bars, Rods, Wire, Profiles and Tubes
ASTM B 429M-06	Standard specification for Aluminium alloy Extruded Structural Pipe or Tube.
BS EN ISO 8493:2004	Tube- Drift- expanding test

Certifications

Cosmos aluminium is holding the following certificates:

Cosmos Certificates
ISO 9001
ISO 14001
ISO 50001
OSHAS 18001
Certificate of Conformity of Factory Production Control- No 0038/CPR/PIR1007756/A- Lloyds
LR Approved- No MD00/4306/0004/6a- Lloyds
REACH
RoHS